BIAX Corporation v. Intel Civil Action No. 2:05-cv-184-TJW

# EXHIBIT 2 (PART 1) FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT



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UNITED STATES DEPARTMENT OF COMMERCE United States Patent and Trademark Office

August 19, 2004

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THIS OFFICE OF:

U.S. PATENT: 5,021,945 ISSUE DATE: June 04, 1991

By Authority of the

COMMISSIONER OF PATENTS AND TRADEMARKS

H. L. JACKSON Certifying Officer

## United States Patent [19]

Morrison et al.

5,021,945 [11] Patent Number:

Date of Patent: [45]

Jun. 4, 1991

#### [54] PARALLEL PROCESSOR SYSTEM FOR PROCESSING NATURAL CONCURRENCIES AND METHOD THEREFOR

[75] Inventors: Gordon E. Morrison, Denver; Christopher B. Brooks; Frederick G. Gluck, both of Boulder, all of Colo.

MCC Development, Ltd., Boulder, [73] Assignee: Colo.

[21] Appl. No.: 372,247

[22] Filed: Jun. 26, 1989

## Related U.S. Application Data

[62] Division of Ser. No. 794,221, Oct. 31, 1985, Pat. No. 4,847,755.

Int. Cl.<sup>3</sup> ...... G06F 15/16; G06F 9/38 U.S. Cl. ...... 364/200; 364/230.3; 364/228.2; 364/262.4; 364/271.3

[58] Field of Search ... 364/200 MS File, 900 MS File

## [56]

## References Cited

#### U.S. PATENT DOCUMENTS

3,343,135	9/1967	Freiman et al 364/200
3,611,306	10/1971	Reigel .
3,771,141	11/1973	Culler .
4,104,720	8/1978	Gruner .
4,109,311	8/1978	Blum et al
4,153,932	5/1979	Dennis et al
4,181,936	1/1980	Kober .
4,228,495	10/1980	Bernhard .
4,229,790	10/1980	Gilliland et al
4,241,398	12/1980	Caril .
4,270,167	5/1981	Koehler et al
4,430,707	2/1984	Kim .
4,435,758	3/1984	Lorie et al
4,466,061	8/1984	De Santis .
4,468,736	8/1984	De Santis .
4,514,807	4/1985	Nogi .
4,574,348	3/1986	Scallon .

## OTHER PUBLICATIONS

Dennis, "Data Flow Supercomputers", Computer, Nov. 1980, pp. 48-56. Hagiwara, H. et al.; "A Dynamically Microprogramma-

ble, Local Host Computer With Low-Level Parallel-

ism", IEEE Transactions on Computers, C-29, N-7.

Jul. 1980, pp. 577-594.
Fisher et al., "Microcode Compaction: Looking Backward and Looking Forward", National Computer Conference, 1981, pp. 95-102.

Fisher et al., "Using an Oracle to Measure Potential Parallelism in Single Instruction Stream Programs", IEEE No. 0194-1895/81/0000/0171, 14th Annual Microprogramming Workshop, Sigmicro, Oct. 1981, pp. 171-182.

J. R. Vanaken et al., "The Expression Processor", IEEE Transactions on Computers, C-30, No. 8, Aug. 1981, pp. 525-536.

Bernhard, "Computing at the Speed Limit", IEEE

Spectrum, Jul. 1982, pp. 26-31.

Davis, "Computer Architecture", IEEE Spectrum, Nov. 1983, pp. 94-99.

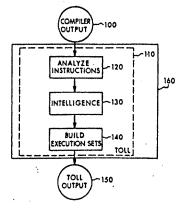
Hagiwara, H. et al., "A User-Microprogrammable Local Host Computer With Low-Level Parallelism", (List continued on next page.)

Primary Examiner-Eddie P. Chan Attorney, Agent, or Firm-Hale and Dorr

### ABSTRACT

A computer processing system containing a plurality of identical processor elements each of which does not retain execution state information from prior operations. The plurality of identical processor elements operate on a statically compiled program which, based upon detected natural concurrencies in the basic blocks of the programs, provide logical processor numbers and an instruction firing time to each instruction in each basic block. Each processor element is capable of executing instructions on a per instruction basis such that dependent instructions can execute on the same or different processor elements. A given processor element is capable of executing an instruction from one context followed by an instruction from another context through use of shared storage resources.

37 Claims, 17 Drawing Sheets



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## OTHER PUBLICATIONS

Article, Association for Computing Machinery, #0149-7111/83/0000/0151, 1983, pp. 151-157.

Mc Dowell, Charles Edward, "SIMAC: A Multiple ALU Computer", Dissertation Thesis, University of California, San Diego, 1983 (111 pages).

Mc Dowell, Charles E., "A Simple Architecture for Low Level Parallelism", Proceedings of 1983 International Conference on Parallel Processing, pp. 472-477.

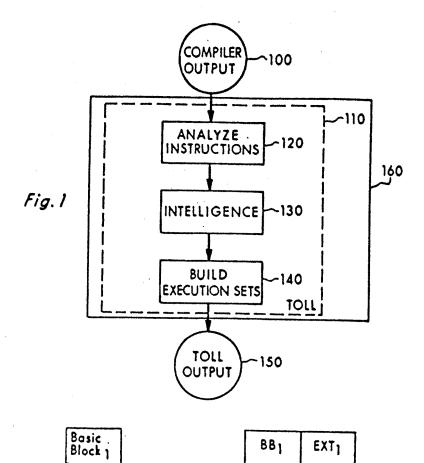
Requa et al., "The Piecewise Data Flow Architecture: Architectural Concepts", IEEE Transactions on Computers, vol. C-32, No. 5, May 1983, pp. 425-438. Fisher, A. T., "The VLIW Machine: A Multiprocessor for Compiling Scientific Code", Computer, 1984, pp. 45-52.

Fisher et al., "Measuring the Parallelism Available for Very Long Instruction, Word Achitectures", IEEE Transactions on Computers, vol. C-33, No. 11, Nov. 1984, pp. 968-976.

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Fig. 2 Prior Art	884
	885
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,	Fig. 2	
Bn	BB <sub>n</sub>	EXT
B <sub>n-1</sub>	BB <sub>n-1</sub>	EXT <sub>n-1</sub>
•	•	•
385	885	EXT <sub>5</sub>

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EXT

EXT<sub>2</sub>

EXT<sub>3</sub>

EXT4

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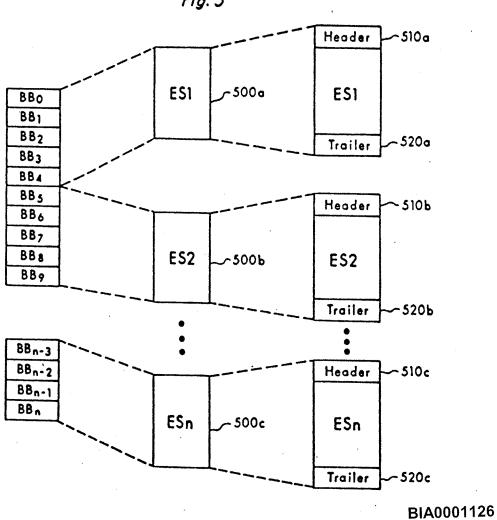
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Fig. 4

10	LPNo	IFTO	scsm <sub>o</sub>				
Il	LPN1	IFT <sub>1</sub>	SCSM1				
•							
In	LPNn	IFT <sub>n</sub>	SCSMn				

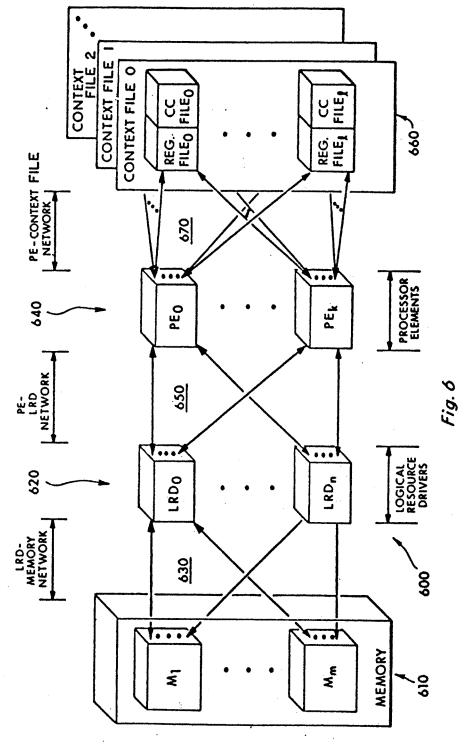
Fig. 5



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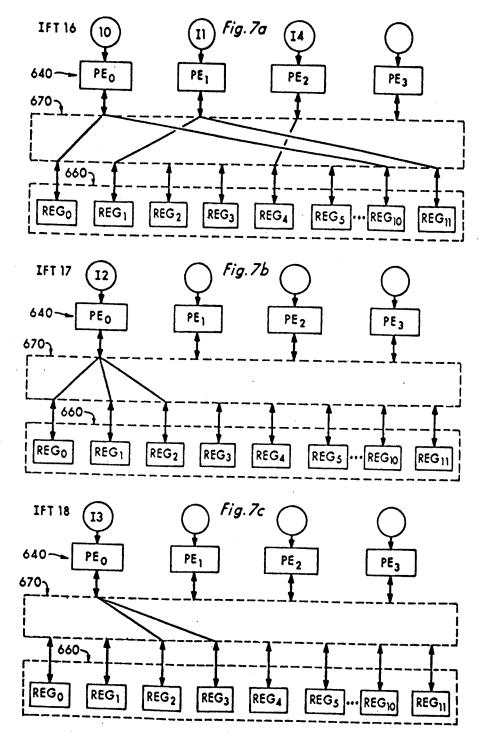
5,021,945



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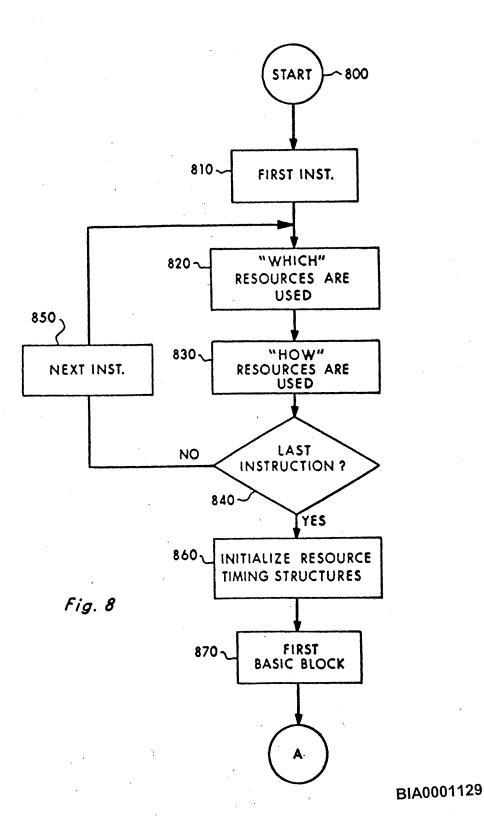
5,021,945



June 4, 1991

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5,021,945



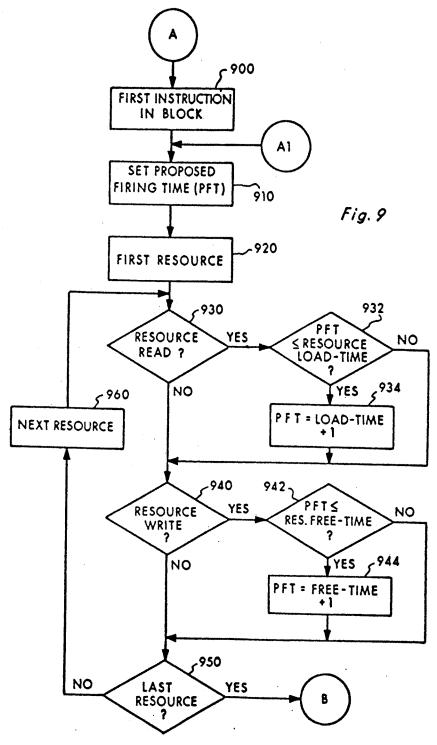
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June 4, 1991

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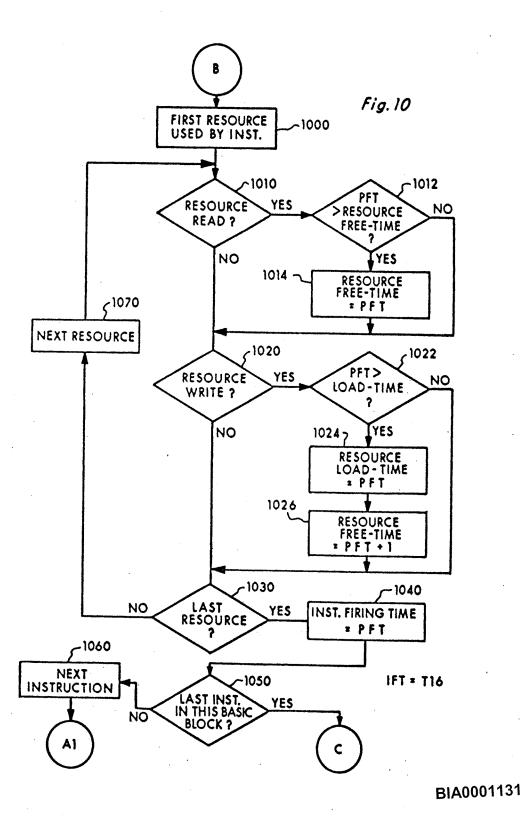
5,021,945



June 4, 1991

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5,021,945



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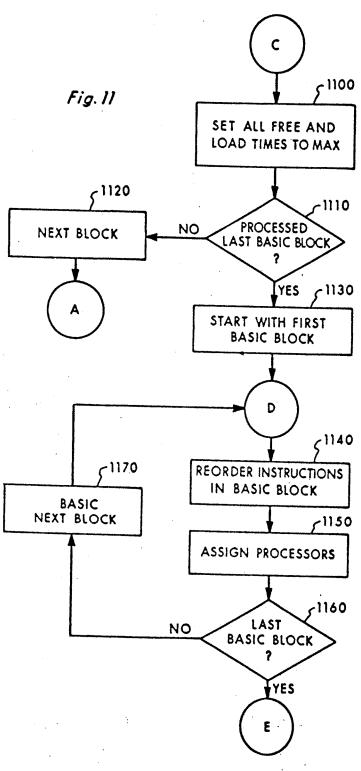
Copy provided by USPTO from the PIRS Image Database on 08/18/2004

U.S. Patent

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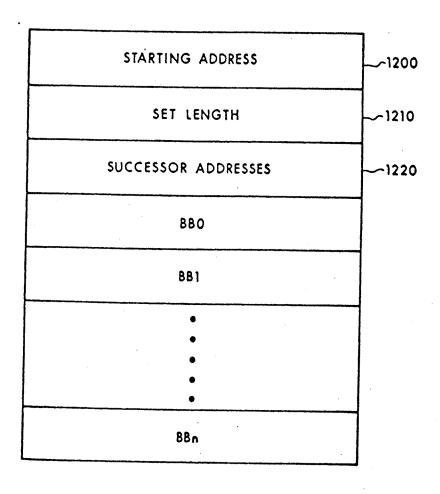


Fig. 12

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5,021,945

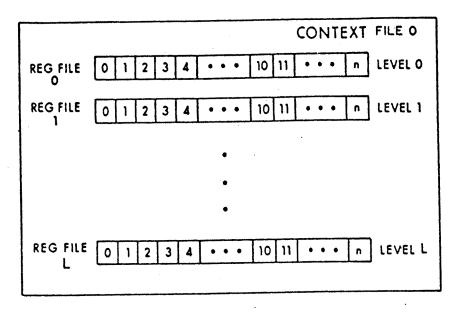


Fig. 13

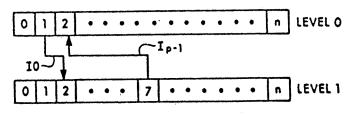


Fig. 14